Burdekin Shire Council

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Burdekin Shire Council

Extrinsic Material to the Local Government Infrastructure Plan

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1.0 Planning Assumptions

Underpinning the Planning Assumptions of the Local Government Infrastructure Plan (LGIP) is the Burdekin Shire Council (BSC) Population and Demand Model. These Geographic Information System (GIS) models have been developed using a "bottom up" approach, allowing for the spatial allocation of population and demands (residential & non-residential) across all land parcels within the Council area, from the base date of 2016 through to a realistic ultimate capacity determined for the Planning Scheme. Although a draft planning scheme is currently under development, the intended land use outcomes and densities are not anticipated to vary significantly from those under the current Integrated Planning Act (IPA) scheme. The base assumptions and methodologies employed to develop these models and other key inputs into the Planning assumptions are detailed below.

1.1 *Population*

Burdekin Shire Council have chosen to adopt the 2015 edition projections (medium series) prepared by the Queensland Government Statisticians Office (QGSO). The medium series has been selected by council officers, and is considered an appropriate representation of anticipated growth through to 2036.

The medium series projections are provided for the BSC region through to 2036. The totals for 2041 and beyond have been extrapolated from the totals provided in the previous periods.

Council-wide non-resident population is typically limited to tourists, and therefore an additional population of 700 people has been added to the QGSO figures, based on an assessment of existing land use data (non-residential accommodation) and typical vacancy rates. The non-resident population has been projected to grow in line with resident population.

For the purposes of the LGIP and AICR, the ultimate scenario of the Burdekin Planning Scheme is considered to occur in around 2156. **Table 1** below identifies the Population and Tourist Figures used as a basis for creating the Population Spatial Model.

***Table 1:* Resident and Non-resident Projections (2016 to Ultimate)**

	2016	2021	2026	2031	2036	Ultimate
Resident Population Projections	*18,007*	*18,289*	*18,651*	*18,968*	*19,223*	*29,087*
Non-resident Population Projections	701	716	732	748	763	1,310
Total Population Projections	***18,708***	***19,005***	***19,383***	***19,716***	***19,986***	***30,398***

Source: Population projections by LGA (QGSO, 2015 edition)

1.1.1 Current Population

Existing population has been allocated on a lot by lot basis to all residential landuses (obtained from Council's rates database) based on dwelling types and identified household sizes. For example, a property identified as containing a house is assigned a 2016 population of 2.49. The determination of household size is based on 2016 Census data. An assessment of projected household sizes was made using QGSO dwelling projections, and it was determined that, given the minor nature of the projected change, the current household size was suitable to remain constant over the modelled periods.

The population allocations have been reviewed and validated through a quantitative analysis against 2016 estimated resident population small area data.

Table 2: Average Household Size

Dwelling Type	2016 to Ultimate
Separate House	2.49
Semi, Detached, Flats	1.51
Other	1.85
All	***2.37***

Source: BSC (Burdekin Shire) Model 2017 & ABS 2016 PEP
Note: Measured as persons/occupied dwelling

1.1.2 Ultimate Population

The ultimate development potential of the Burdekin Shire Council Planning Scheme was determined through analysis of the Planning Scheme intents (Constraints and Densities), consideration of approved development applications and understanding of the realistic development trends throughout the region. Constraints relating to environmental/conservation are considered to be reflected in the planning scheme zoning. Additional constraints considered as part of this assessment included:

- Flood hazards in accordance with Council policies (Q100 and other known flood levels); and
- Existing easements.

Constrained areas have been excluded from the developable area of land parcels in areas with substantial capacity for development.

Planning Scheme density assumptions have been developed for residential zones, with consideration given to the following:

- Residential density provisions within the planning scheme for each zone type, including assumptions about dwelling composition (**Table 3**);
- Household size calculations;
- Discussions with Council Officers and understanding the realistic development trends throughout the LGA; and
- Assumptions about land requirements for roads, parks and other services, depending on the planning scheme provisions for different zones (i.e. considerations/requirements in urban vs rural zones).

Table 3: Ultimate Residential Density Assumptions

Planning Scheme Zone	Precinct/Area	Excluded Land - Services, Roads, etc.	Lot Size (m²) – Attached*	Lot Size (m²) – Detached*	Planned Density - Gross (Dwellings/Ha)
Retail and Commercial		25%	*N/A*		13.5
Residential		25%	250-800**	1,000	8.8
Residential	Low Density	25%	250-800**	900	8.4
Village	Sewered	25%		1,000	7.5
Village	Unsewered	25%		2,000	3.8
Rural		2%		300,000	0.033
Rural	Nature Based Tourism	2%		1,000,000	0.01
Rural	Settlement (Water Available)	5%		4,000	2.38
Rural	Settlement (Water not Available)	5%		10,000	0.95

** Lot Size represents a realistic ultimate average size, based on an assessment of planning scheme provisions, market trends and preferences, and matters affecting propensity to develop.*
*** Varies depending on dwelling type*

Residential populations were allocated across all residential Planning Areas with future capacity identified, in accordance with the medium series QGSO projections. **Table 4** below provides a summary of the population found in each projection area for the periods 2016 to Ultimate.

Table 4: Population Projections 2016 to Ultimate

Projection Areas Inside PIA	2016	2021	2026	2031	2036	Ultimate
Ayr	8,418	8,696	9,051	9,363	9,426	11,103
Brandon	854	861	871	879	884	1,067
Home Hill	3,027	3,024	3,019	3,016	3,024	3,362
All other Localities	6,410	6,424	6,442	6,458	6,652	14,866
TOTAL	**18,708**	**19,005**	**19,383**	**19,716**	**19,986**	**30,398**

Source: BRC (Burdekin Shire) Model 2017

1.1.3 Interim Population Allocation

Growth between 2016 (base year) and ultimate populations have been allocated to each 5-year cohort using a 'gravity model' approach, with populations within each projection area set to align with the low series QGSO projections. Within each projection area, consideration was given to factors affecting propensity to develop, including:

- The properties location with respect to the Priority Infrastructure Area (i.e. accommodates 10-15 years of growth); and
- Availability and proximity to infrastructure services.

Given the size of the Council area, and the limited nature of the population growth anticipated, infill development in the form of small subdivision (e.g. 1 into 2 lots) is considered unlikely to occur to any substantial extent over the next 20 years. Therefore, the allocation of additional population through the LGIP projections has been prioritised and assigned primarily to:

- Take-up of existing residential sites which are currently vacant; and
- Development of larger 'greenfield' residential sites, being parcels greater than 5,000m² in size

1.2 *Infrastructure Demand*

BSC's spatial demand models express residential and non-residential demand in varying demand units. These are:

- Water Supply network - Equivalent persons (EP)
- Sewerage network - Equivalent persons (EP)
- Stormwater - Impervious area (Imp. ha)
- Transport network - Trips per day (Trips)
- Parks and land for community facilities network - Persons

These units of measure have been selected as they are commonly used and easily understood by a reader of the LGIP.

1.2.1 Residential Demand

The Residential Demands have been calculated for each network in the following manner:

- Water Supply network
  - Population at each cohort = residential EP
- Sewerage network
  - Population at each cohort = residential EP
- Stormwater network
  - Impervious area applied on a lot-by-lot basis, using Council land use data and typical impervious fractions from the Queensland Urban Drainage Manual (QUDM)
- Transport network
  - Population at each cohort divided by applicable detached household size (Table 2) to determine equivalent detached dwellings
  - Demand generation of 10 trips per equivalent detached dwelling
- Parks and land for community facilities network
  - Population at each cohort

1.2.2 Non-Residential Demand

Non-residential demand for the Water Supply, Sewer and Transport networks has been calculated by applying equivalent dwelling unit (EDU) rates per hectare respectively to the developable areas available for non-residential development, derived from the population modelling process. The number of Equivalent dwellings was converted to the relevant demand units using:

- For the water supply and sewer networks - equivalent dwellings multiplied by the detached household size at each cohort (in accordance with Table 2)
- For the transport network - equivalent dwellings multiplied by the trip rate per detached dwelling identified in section 1.2.1 (10 trips per equivalent detached dwelling)

The process for determining the existing demand utilised the landuse information developed through the population modelling process and applied the generation rates presented in **Table 5** to the area of the parcel with existing demand.

Non-residential demand for the stormwater network has been applied on a lot by lot basis, using Council land use data (for existing), planning scheme zoning (for future), and typical impervious fractions from the Queensland Urban Drainage Manual QUDM.

***Table 5:* Non-Residential Demands by Zone - Water Supply, Sewerage, Transport (Roads) & Stormwater**

PLANNING SCHEME ZONE	PLANNING SCHEME PRECINCT	WATER & SEWER EDUs / HA	STORMWATER IMP FRACTION	TRANSPORT EDUs / HA
Industry		12	0.9	6
Industry	Extractive	7.5	0	4
Industry	Investigation	7.5	0.8	4
Open Space		0	0	0
Public Purposes		5	0.3	5
Retail and Commercial		17.5	0.9	30
Residential		Based on projected dwelling growth in population model		0.4
Residential	Low Density			0.4
Village	Sewered			0.35
Village	Unsewered			0.2
Rural	Settlement			0.1
Rural	Nature Based Recreation			0
Rural				0

To ensure the existing non-residential demand was not overestimated (i.e. the area of the parcel does not necessarily reflect the demand that the existing land use generates), the demand model takes into account the realistic existing demands based on the size of the parcel and whether or not the existing landuse is consistent with the underlying land use intent. For example, where an industrial use is occurring on a Rural zoned land parcel, and is unlikely to be placing demand over the entire site.

Ultimate future demands are based on demand generation rates per hectare for all land in each non-residential zone presented in **Table 5**.

The future demand calculated through the above process has been trended over the 2016 to Ultimate time period cohorts based on the rate of population growth rate found in each appropriately defined "Trending District" – in other words, it assumes that growth in non-residential demand is proportional to the rate of growth of residential demand. The Trending Districts applied to each Zone/Locality are presented in **Table 6**.

***Table 6:* Trending District applied to Each Zone / Locality**

PLANNING SCHEME ZONE	LOCALITY	TRENDING DISTRICT
All non-residential zones	Ayr	Ayr
All non-residential zones	Home Hill	Home Hill
All non-residential zones	All others	Entire LGA

1.3 *Employment*

The Burdekin Shire Council Employment Model has been developed to provide important inputs into the LGIP, most notably the existing and future employees and future floor space requirements. The methodology for the employment modelling is detailed below.

1.3.1 Current Employment

Australian Bureau of Statistics (ABS) Census data was used to determine an existing employment profile within the Council area by employment sector for the following regions:

- Burdekin Shire Council; and
- Regions aligning with the LGIP Projection Areas, aggregated using SA1 regions to the extent possible.

The employment profile is based on:

- Total population;
- Total current workforce;
- Total potential workforce (residents aged 15 and older);
- Residents who both live and work locally;
- Industry of employment by occupation;
    - For the purposes of the LGIP employment modelling, ABS industry of occupation has been re-categorised into 'employment sectors' in order to align with categories in the LGIP tables. Assumptions made to assign ABS employment industry into LGIP Employment Sector are detailed in **Table 7** below.

Table 7: **Employment Industry Assumptions**

ABS Employment Industry Category	LGIP Employment Sector	ABS Employment Industry Category	LGIP Employment Sector
Agriculture, forestry & fishing	Other	Financial & insurance services	Commercial
Mining	Other	Rental, hiring & real estate services	Commercial
Manufacturing	Industry	Professional, scientific & technical services	Commercial
Electricity, gas, water & waste services	Industry	Administrative & support services	Commercial
Construction	Industry	Public administration & safety	Community Purposes
Wholesale trade	Industry	Education & training	Community Purposes
Retail trade	Retail	Health care & social assistance	Commercial
Accommodation & food services	Commercial	Arts & recreation services	Commercial
Transport, postal & warehousing	Industry	Other services	Other
Information media & telecommunications	Commercial	Inadequately described/Not stated	Other

The following key inputs into Employment Modelling have been produced for each modelled region, using the available ABS data:

- Labour retention rate (Residents working locally ÷ total work force); and
- Job containment rate (Residents working locally ÷ local jobs available)

These attributes are identified in order to assess the employment increase as a result of growth occurring within the LGA.

1.3.2 Future Employment

The employment model assumes that labour retention, job containment, and unemployment levels are maintained throughout all projection periods.

The ratio of work force to population is used to determine employment projections in each LGIP projection area for each cohort, in each employment sector. This is applied to the population projections derived from the BSC population model. The outputs of the employment model used to inform the LGIP include:

- Total current jobs within each LGIP projection area for each employment sector; and
- Additional job requirements for growth within the LGA for each projection period, distributed amongst employment sectors in accordance with the current trends

1.3.3 Floor Space Requirements

Floor space requirements are calculated based on assumptions about floor space per employee for each employment sector. The assumed floor space requirements are detailed in **Table 8**, and have been identified based on industry knowledge and confirmed by BSC officers as both

reasonable and appropriate for use in the LGIP. As with the employment figures, floor space outputs used in the LGIP assumption tables include:

- Total existing floor space requirements within each LGIP projection area for each employment sector; and
- Additional floor space requirements for growth within the LGA for each cohort, distributed mathematically amongst employment sectors within LGIP projection areas.

Table 8: **Floor space assumptions by LGIP Employment Sector**

LGIP Employment Sector	Floorspace (m^2/employee)
Retail	25
Commercial	20
Industry	110
Community Services	25
Other (incl. Home based business)	20

1.4 *Priority Infrastructure Area Capacity*

BSC's growth allocation model considers a range of factors for the distribution and take-up of available capacities across the Planning Scheme, in particular the propensity for areas to develop over time. Based on the assumptions, the modelling indicates that population growth of approximately 3,200 people are realistically able to be accommodated within the PIA up until 2031 (the "PIA Period").

The extent of urban population growth allocated within the PIA boundary (approx. 1,000 people) demonstrates a total remaining capacity for approximately 2,200 people (or 900 dwellings) identified at the end of the PIA period (2031). Despite the remaining capacity at this time, the PIA boundary is considered appropriate on the following basis:

- Infill development and existing vacant residential parcels do not provide sufficient capacity to service anticipated population growth over the 15 year PIA period, and are not expected to develop to any substantial extent within this time;
- Only one physically distinct area of undeveloped 'greenfield' residential land has been included within the PIA boundary at Ayr.
    - This area is bounded on all sides by serviced properties, and allows for a logical and efficient expansion of all infrastructure networks;
    - Given each individual sites proximity to existing trunk infrastructure networks and their co-location, portions of any site within this area have potential to be developed within the PIA period, and therefore exclusion of some of these parcels at the expense of the others is not considered to be appropriate.
- Risk to Council through adoption of the proposed PIA is considered to be low:
    - It is unlikely that development of any of the included sites would incur additional cost impacts to Council;
    - Any trunk works required to service these sites will be relatively small in size, and it is unlikely that the value of any works will exceed the applicable infrastructure charges. Therefore, the provisions relating to automatic refunds are not likely to pose a risk.

2.0 Cost Assumptions

The LGIP has used a variety of costing methodologies where available to inform the development of costs to be used within the Schedule of Works (SoW) model, using the information deemed most accurate and appropriate, which was available at the time the LGIP was being prepared. For asset costing purposes within the SoW model, all costs have been indexed to the base year of the model, 2016 using relevant Producer Price Indices (PPI) data from the ABS unless otherwise noted. The transport network uses the Road and Bridge Construction (RBC) PPI index for Queensland, while all other networks use the Non-residential Building and Construction (NRBC) PPI index for Queensland.

2.1 *Baseline Valuation*

Existing asset valuations within the SoW model provide an additional level of detail when compared to the standard SoW models 'baseline valuation'. The 'Base Estimate' within the BSC SoW model provides the equivalent valuation figure, however this has been built using a raw unit rate cost in addition to project owners costs (on-costs).

On costs are considered to be an essential element of the 'current replacement cost' identified within Statutory Guideline 03/14, relating to design/redesign, environmental considerations, traffic management and project management among other things, all necessary components of the cost to replace an asset. The Evans and Peck report referenced within the SoW model user manual identifies that many Councils already include on costs within their unit rates. Burdekin Shire Council has chosen to separate these costs in order to provide additional transparency and ease of understanding within their LGIP documentation.

2.2 *Water Supply & Sewerage Network*

2.2.1 Water Supply / Sewer Asset Costs

Water Supply and Sewerage network asset costs are derived from a variety of sources provided by Council for the purposes of developing costs to be utilised in the LGIP. Future passive assets (i.e. pipework) were costed based on unit rates prepared and approved by Council. The cost for existing assets, where possible, was sourced from asset registers maintained by Council. Where asset register information was not available, unit rates have been used instead.

2.2.2 Cost Modifiers

In addition to the unit rates identified above, the cost modifiers listed in **Table 10** have also been applied as necessary to assets across the water supply and sewerage networks.

Table 10: **Water and Sewerage network asset cost adjustments**

Modifier	Valuation Component	Applies To	Adjustment Factor
On-Cost Allowance	Works	All existing & future assets	10%
Contingency	Works	All future assets	7.5% - 25% *Time Based*

2.3 *Stormwater*

2.3.1 Stormwater Asset Costs

Stormwater network asset costs are derived from a variety of sources provided by Council for the purposes of developing costs to be utilised in the LGIP. The cost for existing assets, where possible, was sourced from asset registers maintained by Council. Where asset register information was not available, unit rates have been used instead.

2.3.2 Cost Modifiers

In addition to the unit rates identified above, the cost modifiers listed in **Table 11** have also been applied as necessary to assets across the stormwater network.

Table 11: **Stormwater network asset cost adjustments**

Modifier	Valuation Component	Applies To	Adjustment Factor
On-Cost Allowance	Works	All existing & future assets	10%
Contingency	Works	All future assets	7.5% - 25% *Time Based*

2.4 *Transport Network*

2.4.1 Transport Asset Costs

Transport network unit rates were provided by Council for the purposes of developing costs to be utilised in the LGIP where necessary.

Future assets have been costed based on project estimates prepared and approved by Council. The cost for existing assets, where possible, was sourced from asset registers maintained by Council. Where asset register information was not available, unit rates have been used instead.

2.4.2 Cost Modifiers

In addition to the unit rates identified above, the cost modifiers in **Table 12** have also been applied as necessary, to assets across the transport network.

Table 12: **Transport network asset cost adjustments**

Modifier	Valuation Component	Applies To	Adjustment Factor
On-Cost Allowance	Works	All existing & other future assets	10%
Contingency	Works	All other future assets	7.5% - 25% *Time Based*

2.5 *Parks and Land for Community Facilities Network*

2.5.1 Parks Asset Costs

Where no project costs are available, existing park embellishment costs have been established using nominal costs for typical park embellishments.

Future park embellishment costs have been applied using the same method, using standard embellishments comparable to the standards identified in the Desired Standards of Service and the standards of recent trunk park contributions.

Land unit rates have been calculated based on the land classification with consideration also given to flood affected land. These represent an 'englobo' rate, following an assessment of available land valuations within the Council area. Land values per m² of site area are shown in **Table 13**.

Table 13: **Parks land valuation**

Location	Land valuation ($/m²)
Urban Land	$25/m²

Township/Rural Residential	$3/m²
Rural Land	$2/m²
Flood Affected Land	$2/m²

2.5.2 Cost Modifiers

In addition to the unit rates identified above, the cost modifiers in **Table 14** have also been applied as necessary to assets across the transport network.

Table 14: **Asset Cost Adjustments**

Modifier	Valuation Component	Applies To	Adjustment Factor
On-Cost Allowance	Works	All existing & future assets	10%
Contingency	Works	All future assets	7.5% - 25% *Time Based*

3.0 Network Planning

Network planning has been undertaken over a 20 planning horizon from the base date of the LGIP (2016). It is important to note that this does not align with the ultimate development of the Planning Scheme, which based on LGIP modelling and forecasts produced by the QGSO, is currently anticipated to be achieved at or around 2156, taking care to note that Burdekin has experienced negative growth relatively recently.

Given the limited growth anticipated over the LGIP planning horizon, and the available capacity in the existing network, network planning has been prepared at a master planning level, indicative of anticipated infrastructure requirements, to be refined if and when the projected growth occurs.

The network planning horizon has been selected on the basis that it provides a rational alignment between the infrastructure planning and landuse outcomes envisaged under the BSC Planning Scheme. The considerations given to the planning of each network within the LGIP are as follows.

3.1 *Network Planning in General*

An assessment of the future growth characteristics and trends over each network's planning horizon has been performed by Council engineers and planners together with a review into existing network servicing capacity / adequacy through application of the Desired Standards of Service (DSS) identified within the LGIP. The population and demand models completed as a part of the LGIP project have been considered against Council's previously completed network planning in order to reassess its appropriateness and assist in determining where planning 'gaps' may exist that need to be addressed.

3.2 *Water Supply Network*

Water supply network planning has been undertaken to a 20 year planning horizon at a level of service that aligns with the DSS in the LGIP.

Future trunk infrastructure has been primarily guided by discussions between BSC planners and engineers, in consideration of the growth identified in the population and demand modelling outputs.

3.3 *Sewerage Network*

Sewerage network planning has been undertaken to a 20 year planning horizon at a level of service that aligns with the DSS in the LGIP.

Future trunk infrastructure has been primarily guided by discussions between BSC planners and engineers, in consideration of the growth identified in the population and demand modelling outputs.

3.4 *Stormwater Network*

The stormwater network planning was performed collaboratively through discussions between BSC planners and engineers in order to determine a suitable BSC drainage network for the LGIP that will support the existing and future needs of the region and that will meet the community outcomes envisaged by the DSS prepared and agreed to by BSC.

Stormwater network planning has been undertaken to a 20 year planning horizon at a level of service that aligns with the required DSS.

3.5 *Transport Network*

The transport network planning was performed collaboratively through discussions between BSC planners and engineers in order to determine a suitable BSC road network for the LGIP that will support the existing and future needs of the region and that will meet the community outcomes envisaged by the DSS prepared and agreed to by BSC.

Transport network planning has been undertaken to a 20 year planning horizon at a level of service that aligns with the required DSS.

3.6 *Parks and Land for Community Facilities Network*

The Parks and Land for Community Facilities network planning was performed collaboratively through discussions between BSC planners and engineers in order to determine a suitable BSC parks and land for community facilities network for the LGIP, taking into account both land and embellishments. This will support the existing and future needs of the region and that will meet the community outcomes envisaged by the DSS prepared and agreed to by BSC up to the 20 year network planning horizon.

4.0 Financial Modelling Assumptions

Financial modelling inputs for the BSC LGIP SoW model are outlined in **Table 15** below, including brief comments and justifications around the appropriateness of the inputs used.

Table 15: **Financial Modelling Assumptions within the BSC LGIP SoW model.**

Financial Modelling Assumptions		Inputs	Comments/Justification
Model Setup	Base Year of Model	2016	To align with the Infrastructure Planning and Demand Modelling that has been prepared for the LGIP project
	Infrastructure Planning Horizon	20	20 years for all infrastructure networks. This represents the extent to which each network has been planned and alignment of infrastructure and landuse outcomes is reached.
	Demand Unit (Unit of Measure)	EP/Trips/imp ha/Persons	EP - Water Supply / Sewerage networks Imp ha - Stormwater network Trips - Transport network Persons - Parks and Land for Community Facilities network
Financial Inputs	**Discount Rates**		
	Post-tax Nominal WACC to be applied to Expenses (WACC)	6.00%	Comprised of: • 2.5% - Typical 10-year bond rate over the past 3 years; and • 3.5% - Margin
	Real Post-tax Nominal WACC to be applied to Revenues (RWACC)	3.99%	The WACC Adjusted for inflation using the Fisher Equation.
	Escalations		
	Works Escalation Rate (for discounting purposes)	1.04% 2.05%	The current annual 10-yearly moving average of the applicable QLD PPI indices (RBC - Transport, NRBC - All other networks), calculated using the same methodology as the State's 3-year PPI averages.
	Land Escalation Rate (for discounting purposes)	1.93%	The current annual 10-yearly moving average of the Brisbane CPI index, calculated using the same methodology as the State's 3-year PPI averages.
	Modelled Charge Inflation Rate	1.93%	The current annual 10-yearly moving average of the Brisbane CPI index, calculated using the same methodology as the State's 3-year PPI averages.

The LGIP SoW model has adopted a "User Pays" approach for the apportionment of infrastructure costs between the users. In addition, this calculation method also employs a discounted cashflow methodology to appropriately model the time value of money over the modelling horizon and to understand the true cost of infrastructure delivery and funding. The SoW model therefore applies the following formula in order to determine a cost per demand unit.

$$\frac{\text{Existing Infrastructure Value (\$) + NPV (Nominal) of Future Infrastructure Expenditure (\$)}}{\text{Current Demand (D) + NPV (Real) of Future Demand (D)}}$$

The Net Present Value (NPV) of future infrastructure expenditure is determined using the *Nominal WACC* (6.00%) and *Escalation Rates* (1.04% & 2.05%), to take into account the escalation of the capital spend in the years forward of the base year. These rates are aligned with assumptions used in Council's Long Term Financial Forecast (LTFF).

The NPV of future demand is a proxy, used to represent future revenue from infrastructure charges. This is determined using a *Real WACC* (3.99%), which is adjusted to account for inflationary effects.

The use of these equations determines an escalating price path which is driven by the inflation rate. In this way, the contribution rate grows over time in line with other cost growth in works, land, sales and wages. The final cost schedules are presented in the LGIP SoW Model.

4.1 *Projected Revenue for Financial Sustainability Assessment*

Approximately 30% of future growth has been projected to involve the take-up of developed, urban land which is currently vacant. For this reason, the projected revenues have been discounted by 30%, accounting for the fact that these sites have already paid infrastructure charges, and are unlikely to be contributing to Council's future revenue streams (i.e. Future dwellings on these sites will receive credit for 1 dwelling from the original reconfiguration).